PATENT SPECIFICATION

1,134,601

DRAWINGS ATTACHED

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1134601

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COMPLETE SPECIFICATION

Improvements in or relating to Pallets

We, HUGH STEVENSON & SONS LIMITED, a British Company, of Errwood Park, Crossley Road, Manchester 19, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to pallets for use in fork-lift truck operations.

A prerequisite of such a pallet is to provide means for maintaining the storage platform in a raised position above the floor surface, whilst allowing, for example, the arms of a fork-lift truck or other handing appliance to pass beneath the platform.

An object of this invention is to provide an improved pallet construction and according to the invention a portable pallet for use in fork-lift truck operation includes a deck or platform carrying a plurality of mutually spaced legs each composed of deformable material such as fibreboard, corrugated board, or cardboard, and formed from a blank of the material each to form a rectangular box having a closed end, which is formed with one or more slots, the deck or platform having portions cut therefrom to form a securing flap or flaps for each leg which on assembly of the legs to the deck or platform is or are folded to pass through and subsequently to engage with the walls of said slot or slots, the lower portions of the edges of each flap being contoured to provide snap-fitting engagement between the flap and the walls of its corresponding slot.

In one arrangement according to the invention said flap or flaps is or are folded to lie in face-to-face relationship with the interior surface of said closed end.

Preferably reinforcing insert members are inserted into each leg of the completed pallet, said members being so shaped and dimensioned that each of said securing flaps is sandwiched between a face of said insert and the interior surface of said closed end.

In a preferred arrangement according to the invention a portable pallet includes box legs each of which comprises a substantially rectangular base portion to opposite ends and side of which is hingedly attached a corresponding pair of end and side wall panels, each end wall panel being formed with a pair of hingedly attached laterally extending flaps, and each side wall panel being formed with a terminal hingedly attached extension panel which is formed with a pair of hingedly attached aforementioned laterally extending flaps, the shape of all of said flaps and panels being substantially rectangular, such that in the assembled box of each of the first-mentioned pair of flaps are adapted substantially to cover and form a lining for one of the side wall panels, each extension panel is adapted to be folded over one of the side wall panels and its lining thereby forming a pair of complete side walls of three thicknesses of material, and respective flaps of each of the two pairs of the latter mentioned flaps are adapted to lie in face-to-face relationship with each other, substantially to cover and form a lining for one of the end wall panels thereby forming a pair of complete end walls of three thicknesses of material, the assembled container further including self-locking means.

The invention will now be described in greater detail, by way of example, with reference to the accompanying drawings in which:—

Figure 1 shows a deck or platform for the pallet,

Figure 2 shows a cut and scored blank from which one of the legs of the pallet is built up,

Figure 3 shows on an enlarged scale, a partially constructed leg.

Figure 4 shows an underside view of a partially assembled pallet,

Figure 5 shows three different methods of attaching the legs to the pallet board,

Figure 6 shows a blank from which a leg insert is constructed.

Figure 7 shows a diagrammatic cross-sectional side elevation of an assembled leg insert, and

Figure 8 shows three further forms of leg insert construction.

Referring to the drawings the pallet comprises a deck or platform 1 which is rectangular in shape, and carries (Fig. 4) a plurality of mutually spaced legs 2 providing passageways extending in two mutually perpendicular directions beneath the platform for receiving the arms of a fork-lift truck.

In the construction shown in figure 1 the platform 1 is provided with pairs of opposing securing flaps 3 which are formed by making incisions through the platform along lines arranged as a letter H. The platform is made from any substantially rigid material which permits the flaps 3 to be formed in this way, for instance, fibreboard, corrugated paper or similar cardboard material.

Each leg 2 is constructed, in a manner to be described below, from a blank of sheet material having a base portion 4 formed with a pair of end wall panels 5 and a pair of side wall panels 6. Each end wall panel is formed with a pair of lateral flaps 7, whilst each side wall panel is formed with a terminal extension panel 8, each extension panel being formed with a pair of lateral flaps 9. The extension panels are further provided with tongue-like projections 10 which on assembly of the leg interlock with one or other of two parallel grooves 11 formed in the base portion 4.

Each leg is formed by folding each of the end wall panels 5 through 90° about the lines of weakening 12 and then folding each flap 7 through 90° and inwardly of the base about the lines of weakening 13. The pairs of flaps 9 are folded through 90° outwardly of the base about the lines of weakening 14 and by folding each side panel through 90° about the lines of weakening 15 and then folding the extension panels first through 90° about the score lines 16 and through 180° about the score lines 17 and flaps 9 are sandwiched between the side wall panels and the extension panels, the tongues 10 formed on the latter interlocking with the grooves 11 in the base, thereby forming a complete side wall of three thicknesses of material. Figure 3 illustrates one complete side wall 18 and it can be seen that after the extension panel 8 has been folded, as described above, about the lines of weakening 16 and 17 respective flaps of each of the two pairs of flaps 9 will be brought into face-to-face relationship with each other and will substantially cover and form a lining for the end wall panels 5, thus forming a complete end wall of three thicknesses of material.

Assembly of the complete pallet is effected by folding the flaps 3 upwardly through 90° about the lines of weakening 19. The flaps are then inserted through the slots 20 formed in the base portion of each leg until the base portion is flush with the upper surface of the platform. The flaps 3 are then folded down over the inside surface of the base portion to lock the leg in position. Each leg is held in position partly by the snap-fitting engagement between the shaped corner portions 21 of each flap with the edges of the slots 20, partly by the flaps 3 overlapping the inside of the base portion 4 of each leg, and partly by the frictional engagement between the edges of each flap and its corresponding slot.

As shown in Figure 5 the pairs of engaging flaps 3 can be replaced by a single flap 22 or 23. The single flap 22 or 23 is adapted to pass through and engage with a slot 24 or 25 lying parallel to an end or side edge of a completed leg respectively. Figure 5 shows each box leg construction arranged above its corresponding flap or flaps, it being understood that prior to assembly of each box leg to the platform the former must first be turned through 180° so that upon insertion of the or each flap into its respective slot the base portion or closed end of the box leg is flush with the upper surface of the platform. It is clear from the drawings that the edges defining the slots 20, 24, and 25 are spaced sufficiently from the inner end and side walls of a particular box-leg so that when the corresponding flap members 3, 22 and 23 are inserted through the slots they do not engage with the aforesaid inner end and side walls. Prior to bending the flaps so that they overlap the inner surface of the base portion of each box-leg, the retaining mechanism for each leg is provided, as already exemplified in the last paragraph, solely by the snap-fitting engagement between the shaped corner portions of each flap with the edges of the slots and by the frictional engagement between the edges of each flap and its corresponding slot. With all types of securing flap described above further reinforcing inserts can be used with advantage to increase the locking engagement between the legs and the pallet. One type of such a reinforcing insert 26 is illustrated in Figure 7 and this is made up from a blank of sheet material 27 (Figure 6) as follows.

The panels 28 and 29 are folded in turn through 90° about the lines of weakening 30 and 31 respectively and then the panel 32 is folded about the line of weakening 33 until the end of the blank is in close proximity to the line of weakening 31. Panels 34 and 35 are then folded in turn through 90° about the lines of weakening 36 and 37 respectively so that panel 35 overlaps and lies in face-to-face relationship with the panel 29. When an insert has been assembled in this fashion it is inserted into a corresponding leg of a completed pallet until the engaging flap is or are sandwiched between the base portion of the leg and the panel 28. Each insert is dimensioned so that it resides within its corresponding leg in tight fitting relationship and so that the open side

of the leg is completely covered. These reinforcing inserts have the effect of considerably increasing the stacking strength capabilities of the pallet and esure that the securing or engaging flaps 3 are maintained in face-to-face relationship with the base portion of the pallet legs. Although only one form of insert has been described it will be understood that other types may be used provided the abovementioned requirements are fulfilled. Figure 8 illustrates three alternative leg insert constructions.

In certain circumstances it is advantageous to further provide the pallet deck or platform with hingedly attached side extension panels 38 on one or both pairs of opposite edges. These extensions help to reinforce the pallet edges, give protection when a palletised load is metal banded and enables the leg securing flaps to be positioned close to the pallet edges so that adequate space is provided for fork-lift truck operation such as when small size pallets are in use.

It will be appreciated from the foregoing description that attachment of the legs to the platform is easily rendered and can be effected by an unskilled person in circumstances where, as is most convenient for transport, the pallets are received by the user in separate parts and in a compact or flat condition.

It will, of course, be understood that the dimension of the legs and tieir spacing on the platform will be chosen to provide a pallet in which there is a necessary resistance to lateral collapse of the legs when the pallet is under load and which has adequate compressive strength in the vertical direction.

WHAT WE CLAIM IS:—

1. A portable pallet for use in fork-lift truck operation including a deck or platform carrying a plurality of mutually spaced legs each composed of deformable material such as fibreboard, corrugated board, or cardboard, and formed from a blank of the material each to form a rectangular box having a closed end, which is formed with one or more slots, the deck or platform having portions cut therefrom to form a securing flap or flaps for each leg which on assembly of the legs to the deck or platform is or are folded to pass through and subsequently to engage with the walls of said slot or slots, the lower portions of the edges of each flap being contoured to provide snap-fitting engagement between the flap and the walls of its corresponding slot.

2. A portable pallet as claimed in claim 1 in which said securing flap or flaps is folded to lie in face-to-face relationship with the interior surface of said closed end.

3. A portable pallet as claimed in claim 1 or 2 in which insert members are inserted into each leg of the completed pallet, said members being so shaped and dimensioned that each of said securing flaps is sandwiched between a face of said insert and the interior surface of said closed end.

4. A portable pallet as claimed in claim 3 in which each box leg is open at the end opposite said closed end, said insert members being so dimensioned that, upon insertion, the open-ended side of each leg is completely covered.

5. A portable pallet as claimed in any one of claims 1 to 4 wherein each box leg comprises a substantially rectangular base portion to opposite ends and sides of which is hingedly attached a corresponding pair of end and side wall panels, each end wall panel being formed with a pair of hingedly attached laterally extending flaps, and each side wall panel being formed with a terminal hingedly attached extension panel which is formed with a pair of hingedly attached aforementioned laterally extending flaps, the shape of all of said flaps and panels being substantially rectangular, such that in the assembled box of each of the first-mentioned pair of flaps are adapted substantially to cover and form a lining for one of the side wall panels, each extension panel is adapted to be folded over one of the side wall panels and its lining thereby forming a pair of complete side walls of three thicknesses of material, and respective flaps of each of the two pairs of the latter mentioned flaps are adapted to lie in face-to-face relationship with each other, substantially to cover and form a lining for one of the end wall panels thereby forming a pair of complete end walls of three thicknesses of material, the assembled container further including self-locking means.

6. A portable pallet as claimed in claim 5 wherein the self-locking means comprises a tongue formed on the free edges of each of the terminal extensions, which, on assembly of the legs interlock with one or other of two grooves formed in the base of each leg.

7. A portable pallet substantially as hereinbefore described and illustrated with reference to and as illustrated by the accompanying drawings.

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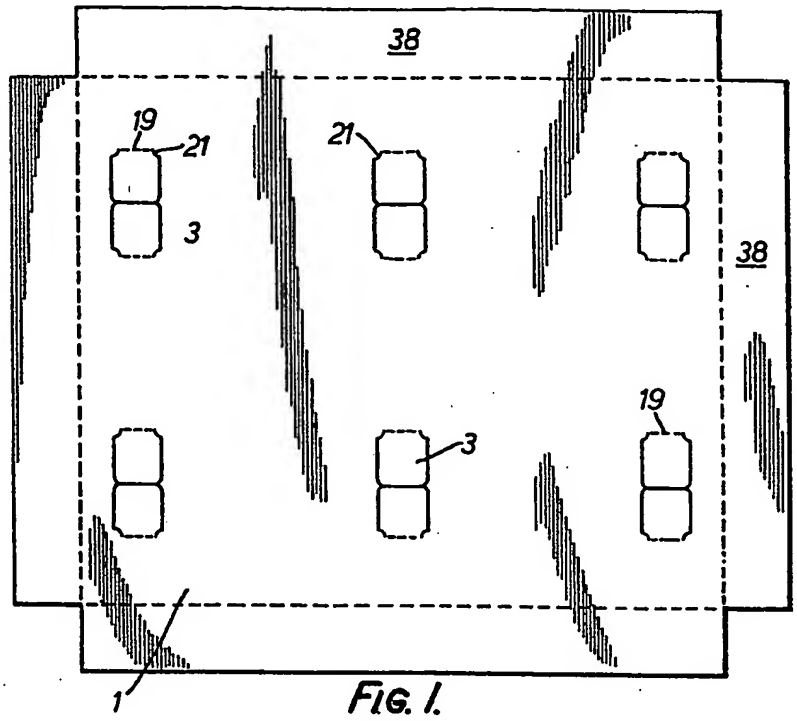
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FIG. 1.

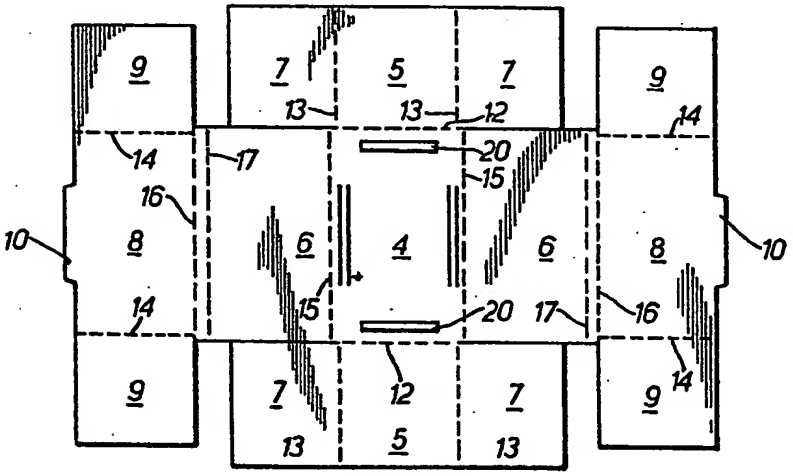
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FIG. 2.

1,134,601 COMPLETE SPECIFICATION
4 SHEETS
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SHEETS 1 & 2

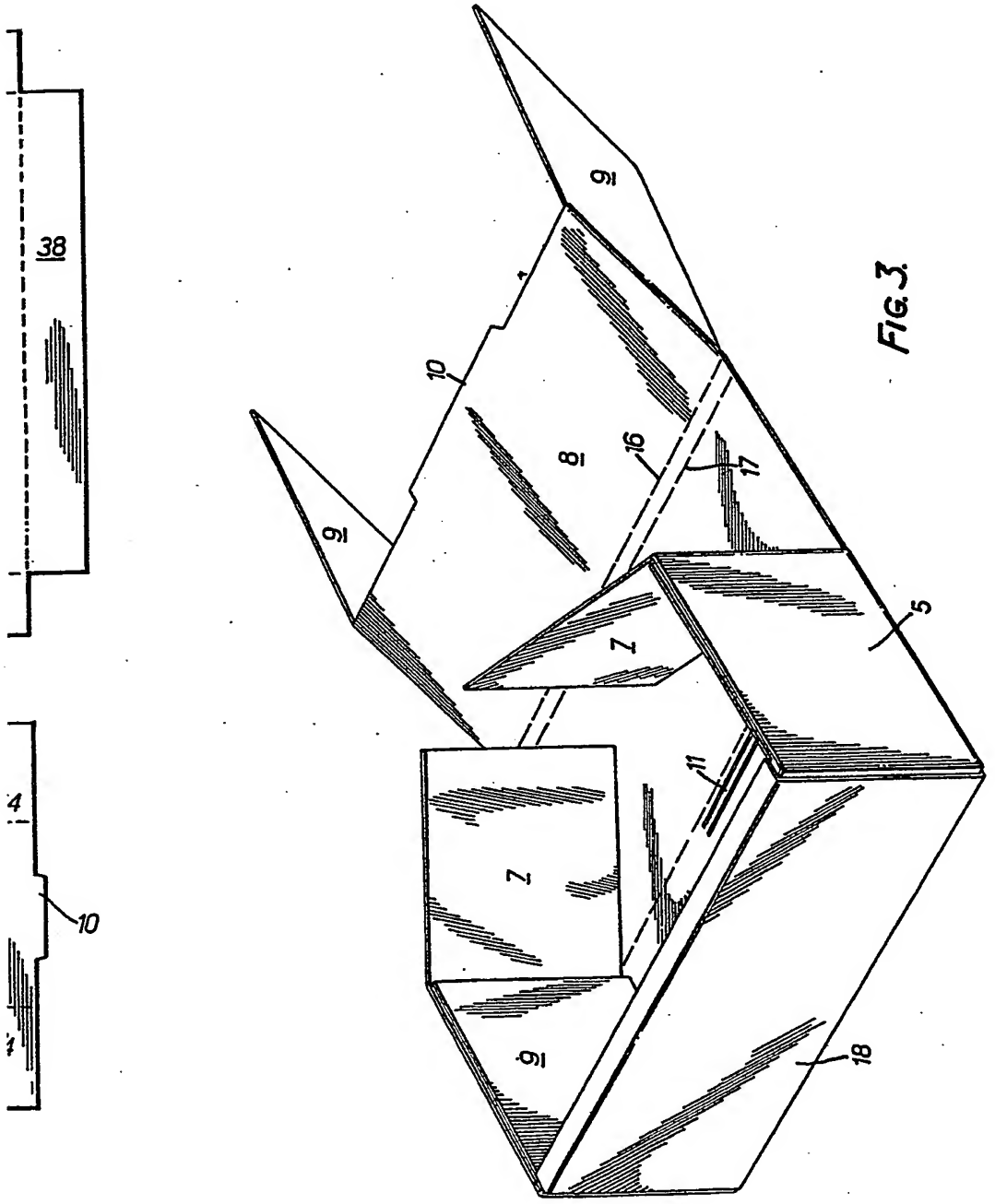

FIG. 3.

1,134,601
4 SHEETS

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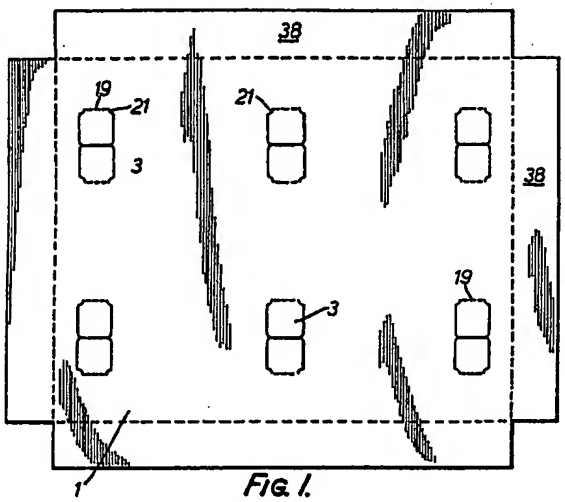

FIG. 1.

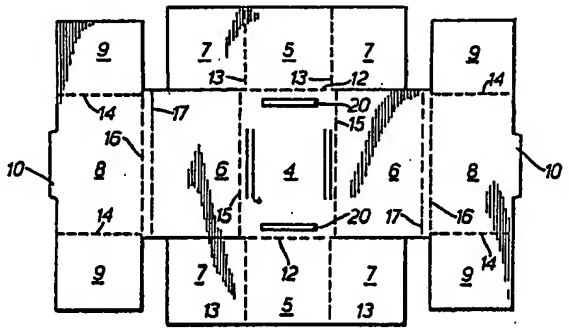

FIG. 2.

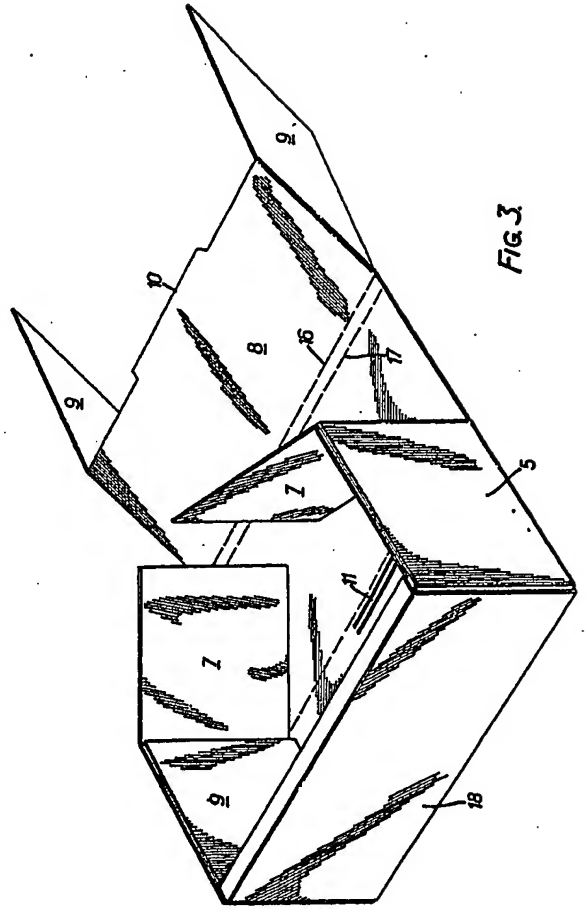

FIG. 3.

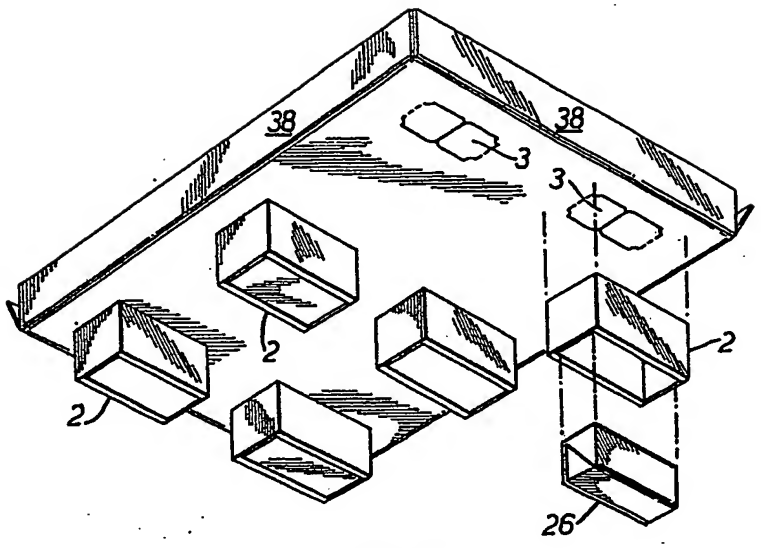

FIG. 4.

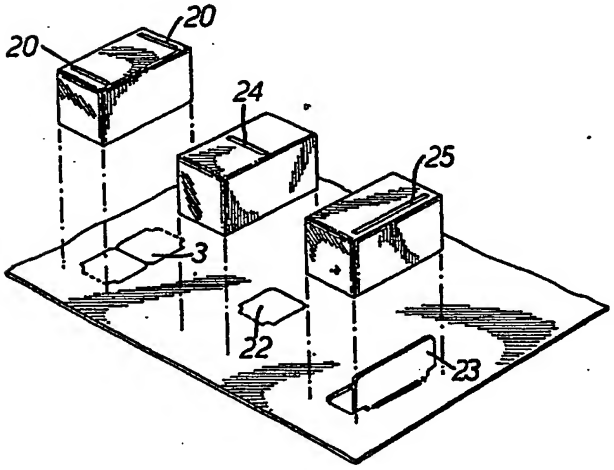

FIG. 5.

1,134,601 COMPLETE SPECIFICATION
4 SHEETS
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SHEETS 3 & 4

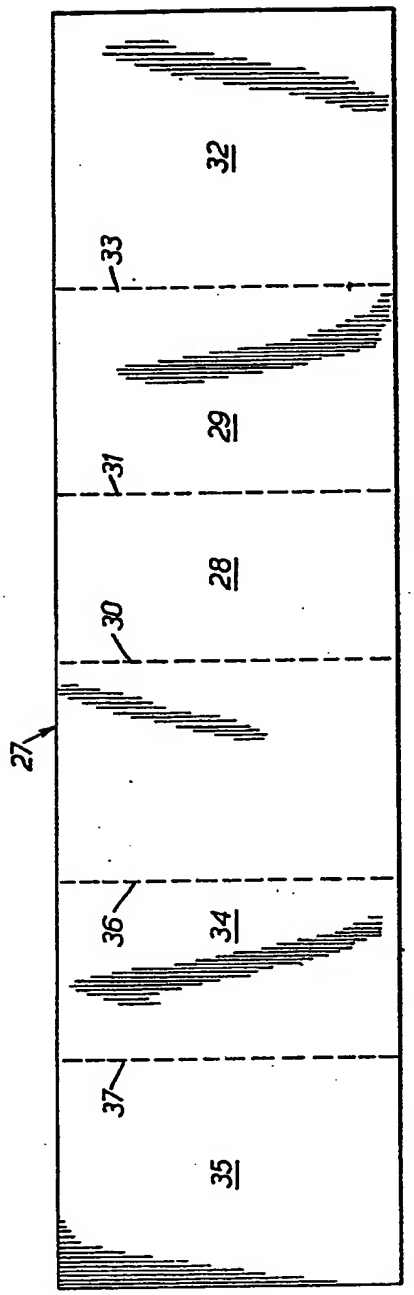

FIG. 6.

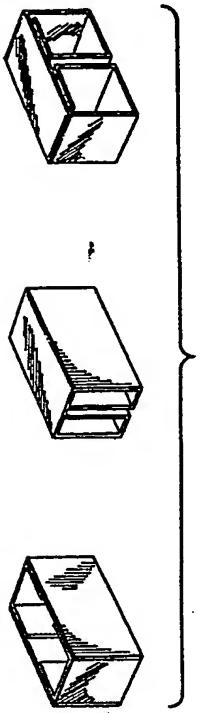

FIG. 8.

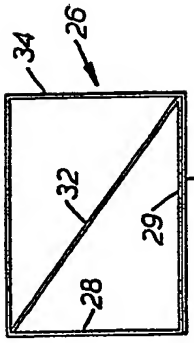

FIG. 7.

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4 SHEETS
COMPLETE SPECIFICATION
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SHEETS 3 & 4

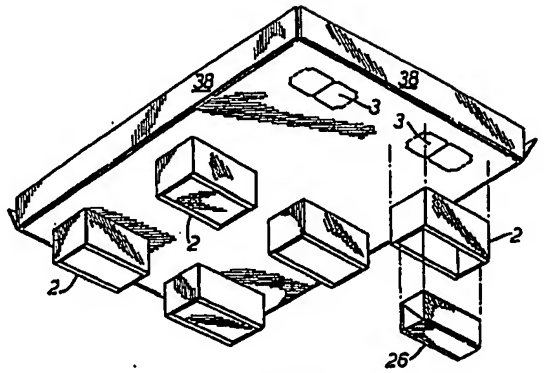


FIG. 4.

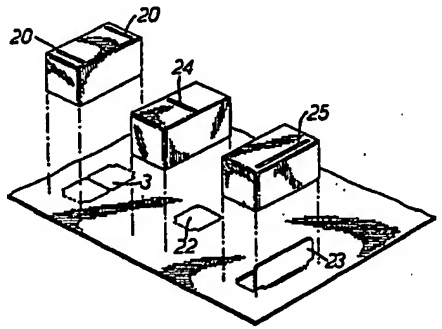


FIG. 5.

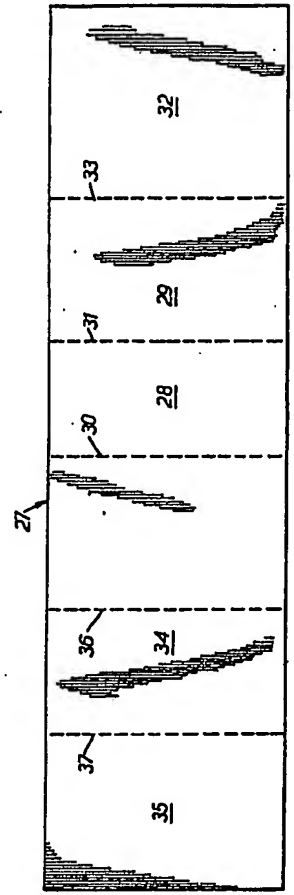
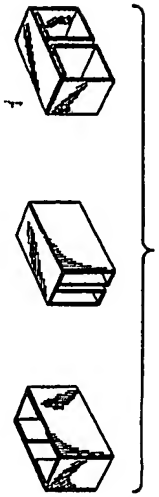


FIG. 6.



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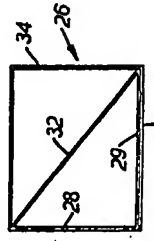

FIG. 7.